NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

HEAVY USE AREA PROTECTION

(Acre)
Code 561

DEFINITION

The stabilization of areas frequently and intensively used by people, animals or vehicles by establishing vegetative cover, by surfacing with suitable materials, and/or by installing needed structures.

PURPOSES

This practice may be used as a part of a resource management system to support one or more of the following purposes:

- Reduce soil erosion
- Improve water quantity and quality
- Improve air quality
- Improve aesthetics
- Improve livestock health

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to urban, agricultural, recreational, or other frequently and intensively used areas requiring treatment to address one or more resource concerns.

CRITERIA

General Criteria Applicable to All Purposes

All planned work shall comply with Federal, state, and local laws and regulations.

Measures shall be taken to limit the generation of particulate matter.

Safety of the users shall be incorporated into the design of the heavy use area protection.

Design load. The design load will be based on the type of traffic, (vehicular, animal, or human) anticipated on the heavy use area. The minimum design load for areas that support vehicular traffic will be a wheel load of 4000 lbs.

Foundation. All site foundations shall be evaluated for soil moisture, permeability, texture and bearing strength in combination with the design load and anticipated frequency of use.

A base course of gravel, crushed stone other suitable material and/or geotextile shall be provided on all sites with a need for increased load bearing strength, drainage, separation of material and soil reinforcement. Natural Resources Conservation Service (NRCS), National Engineering Handbook (NEH), Parts 642 and 643 (formerly, NEH, Section 20) and AASHTO M-288 (latest edition) provide guidance in quality specification and geotextile selection.

An impervious barrier shall be provided on sites with a porous foundation (high permeability rate), where there is a need to protect ground water from contamination.

Foundation preparation shall consist of removal and disposal of soil and other material that are not adequate to support the design loads.

Surface treatment. The surface treatment used shall be based on sound engineering

principles and meet the following criteria for the surface treatment used.

A geotextile fabric shall be installed under all treatment areas where needed to protect the integrity of the treatment materials. The geotextile fabric shall meet the minimum requirements for Class IV geotextiles as shown in Table 1 Requirements for Woven Geotextiles or Table 2 Requirements for Nonwoven Geotextiles of NRCS Material Specification 592, Geotextile.

The geotextile fabric shall be anchored in the toe trenches of stream crossings and watering ramps. In the upstream toe of stream crossing, the fabric will be back-lapped over its own anchored trench. A minimum overlap of geotextile panels without sewing shall be 18 inches at all joints.

Bituminous Pavement. The thickness of the pavement course, kind and size of aggregate, proportioning of bituminous materials, and mixing and placing of these materials shall be in accordance with Department of Transportation criteria for the expected loading. The pavement surface shall be a minimum of 18 inches above the high water table. All areas paved shall have a minimum of 6 inches of base course consisting of gravel, crushed stone, or other suitable materials. The material in place may be used as the base course if adequate.

Concrete. The quality and thickness of concrete and the spacing and size of reinforcing steel shall be appropriate for the expected loading and in accordance with sound engineering practice. Concrete shall be placed over a minimum 6 inch thick layer of granular material. The granular material shall be compacted to a density equal to at least 95 percent of the maximum density obtained in compaction tests of the fill performed by Method A, ASTM D 698.

Other Cementitious Materials. Soil cement, roller compacted concrete, and coal combustion by-products (flue gas desulfurization sludge and fly ash) may be used as surface material if designed and installed to withstand the anticipated loads and surface abrasion.

Aggregate. The minimum thickness for a gravel surface shall be 2 inches.

Other Treatment. Surfacing materials such as cinders, tanbark, bark mulch, cypress mulch, brick chips, shredded rubber and/or sawdust shall have a minimum layer thickness of 2 inches.

Sprays and artificial mulches. Sprays of asphalt, oil, plastic, manufactured mulches, and similar materials shall be installed according to the manufacturer's recommendations.

Structures. All structures shall be designed according to appropriate NRCS standards and specifications or Engineering Handbook recommendations**.**

Heavy use areas designed with a roof cover shall be designed for applicable wind and dead loads for agricultural buildings according to local building codes. Wind loads shall be calculated using ASAE EP288 or ASCE 7-02. Post and beam design shall be in accordance with procedure described in the National Forest Products Association's *National Design Specification for Wood Construction.* Post embedment design shall be in accordance with ASAE practice standard ASAE EP486.

All lumber in contact with the ground, litter, manure, or compost shall be pressure-treated in accordance with ASTM D 1760. All metal used in the structure shall be galvanized or otherwise protected from corrosion.

Vegetative measures. Stabilization of areas with vegetative cover shall only be used on areas where traffic can be managed to maintain vegetative cover. If vegetation is not appropriate, other method of stabilizing the heavy use area shall be used. Vegetative materials used shall be grass species or other plant materials that are wear resistant and have fast recovery from heavy use and/or suitable to the site. Liming, fertilizing, soil preparation, seeding, mulching, sodding and vegetation management shall be according to the planned use and appropriate conservation practice standard in the local technical guide.

Runoff treatment. Surface runoff shall be controlled to minimize overland flow onto and through the heavy use area. Runoff from the site shall not directly discharge into surface water bodies. Runoff from heavy use areas for livestock shall be treated in accordance with the applicable Florida NRCS conservation practice standards. Runoff from other heavy use areas shall be treated in accordance with local and state criteria.

Drainage and erosion control. Provision shall be made for surface and subsurface drainage,

as needed and for disposal of runoff without causing erosion or water quality impairment. Provision shall be made to exclude unpolluted run-on water from the treatment area. All treatment areas shall be shaped to prevent ponding of water.

Proctection. All areas disturbed during construction shall be vegetated. Vegetative cover will be established and managed in accordance with Florida NRCS conservation practice standard Critical Area Planting, Code 342.

Additional Criteria for Areas Utilized by Livestock

The treated area shall extend an appropriate distance from facilities such as portable hay rings, water troughs, feeding troughs, mineral boxes and other facilities where livestock concentrations cause resource concerns.

Florida NRCS conservation practice standards, Critical Area Planting, Code 342, Fence, Code 382, Prescribed Grazing, Code 528A, Filter Strip, Code 393, and/or Use Exclusion, Code 472, shall be used as companion practices, when needed, to meet the intended purpose of the heavy use area protection. Heavy use areas that are grazed shall be included in the annual grazing plan.

Provisions shall be made to collect, store, utilize and/or treat manure accumulations and contaminated runoff in accordance with the applicable Florida NRCS conservation practice standards. Heavy use area protection from animal confinement shall be managed to minimize the degradation of ground and surface water. Waste from heavy use area protection for animal confinement shall be collected and treated and/or utilized. Surface runoff from these locations will be stored and treated and/or utilized.

Treatment area. The treated area shall extend a minimum of 10 feet outside the limits of facilities such as watering facilities, portable hay rings, feeding troughs, mineral boxes, or other facilities where concentrated livestock impacts cause resource concerns.

For animal trails and walkways the minimum treatment width shall be 10 feet (cattle only). A width of 15 feet is generally used for cattle/vehicle type walkways. All trails and walkways shall be fenced.

Gravel treatment. Gravel used for surface treatment shall be crusher run stone, or graded stone as conditions warrant, with a maximum size of 2 inches. All surface material shall be smoothed uniformly and compacted. The minimum depth of crusher run stone or gravel shall be 6 inches uncompacted. If graded stone is used, the depth shall be 5 inches of graded stone with a 1 inch topping of crusher run stone.

Stream crossings. Treatment areas for stream crossings and watering ramps shall have a minimum bottom width of 10 feet and a maximum bottom width of 20 feet. "Cattle only" stream crossings may be as narrow as 6 feet. Ramps shall have a slope of 5 horizontal to 1 vertical (5:1) or flatter toward the stream with side slopes of 2.5 horizontal to 1 vertical (2.5:1) or flatter. Surface water shall be diverted away from crossing. Protection for watering ramps shall extend into the pond or stream a sufficient distance to protect the pond or stream bottom.

Stream crossings shall be located where the stream bed is stable. Stream crossings in wetland areas shall be avoided. Crossing shall be perpendicular to the direction of stream flow. Stream crossings shall have a toe trench constructed on the upstream and downstream edges.

Surface materials for stream crossings and watering ramps shall consist of graded stone or crusher run stone. Selection of surface material shall be based on stream velocities and soil conditions at the site. Final thickness of the material shall be in accordance with sound design. Surface material shall extend the full length and width of the treatment area. All surfaces shall be smoothed uniformly and compacted.

Watering ramps. Watering ramps may only be located in streams or in ponds which serve as a water source when no other practical source of livestock water is available or can be reasonably developed. Ramps installed in farm ponds shall extend far enough into the pond to ensure livestock have access to water during drought conditions.

Ramps shall only be used as a last-alternative watering source. Ramps in streams shall not extend more than 5 feet into the stream or to the center of the stream, whichever is less. Ramps in streams shall be installed perpendicular to the direction of the stream flow and in areas where the streambed is stable. Wetlands shall be

avoided. Watering ramps located in streams shall have a toe trench constructed on the upstream and downstream edges of the ramp.

Ramp areas shall be designed and installed to prevent surface water from entering the ramp.

Protection. Fencing shall be installed as necessary to control all animal traffic. Stream crossings and watering ramps shall be permanently fenced to prevent livestock access to the stream or pond except at the access ramps. Fencing shall be constructed in accordance with Florida NRCS conservation practice standard, Fence, Code 382.

Additional Criteria for Areas Utilized for Recreation

The treated area shall be conducive to the overall recreation area and aesthetically blend with the general landscape and surroundings.

Plants, landscaping timbers, traffic control measures, wooden walkways, etc. shall be evaluated for effectiveness, aesthetics, safety, and accessibility as covered by the Americans with Disabilities Act.

CONSIDERATIONS

When stabilizing heavily used areas consider adjoining land uses and the proximity to residences, utilities, cultural resource areas, wetlands or other environmentally sensitive areas, and areas of special scenic value.

For heavy use areas conducive to protection by vegetation, consideration must be given to the effect(s) of treading and/or miring. The vegetative species selected should tolerate and persist under heavy use conditions. If practicable, consider increasing the size of the area and/or establishing a rest/non-use period to allow plant recovery and increase vigor.

Heavy use area protection effects on the water budget, especially on volumes and rates of runoff, infiltration, and transpiration due to the installation of less pervious surfaces should be considered in the selection of surfacing materials.

The transport of sediments, nutrients, bacteria, organic matter from animal manures, oils and chemicals associated with vehicular traffic, and soluble and sediment-attached substances carried by runoff should be considered in selection of companion conservation practices.

Consider using additional air quality conservation practices such as Windbreak/Shelterbelt Establishment (code 380) or Herbaceous Wind Barriers (code 603) to impede transport of particulate matter between the source (i.e., heavy use area) and nearby sensitive areas.

If the purpose of the heavy use area protection is improvement of water quality, the heavy use area should be (re)located as far away from the waterbody or watercourse as possible. Any work in and/or discharges to near streams, wetlands or waterbodies may require a permit from the US Army Corps of Engineers, Water Management Districts, Florida Department of Environmental Protection, or local authority.

The size of heavy use areas utilized by livestock is dependent on the landowner's operation including type and number of animal, confinement periods, and/or the intended use. The size of treatment areas can range from 30 square feet per animal in partial-confinement to 400 square feet per animal in total confinement to 4000 or more square feet for animal exercise areas. The size of a heavy use protection area is dependent on the landowner's operation including type of animal and time animals are confined. Heavy use protection areas should be kept as small as practicable.

When surface treatments such as bark mulch, wood-fiber or other non-durable materials are used for short-term livestock containment areas, consideration should be given to vegetation of the affected area with a cover crop.

For areas with aggregate surfaces that will be frequently scraped, consideration should be given to the use of concrete or cementitious materials to lessen the recurring cost of aggregate replacement.

Where heavy use areas are vegetated for protection, consideration must be given to the number of animals and time confined. The area should be sized so that the selected vegetation can be maintained in vigorous condition and not destroyed by animal traffic. The amount of waste deposited on the vegetated heavy use areas must be accounted for in the nutrient management plan.

This practice may affect surface and groundwater caused by introduction of fertilizer for vegetated areas, and oils and chemicals associated with concrete and asphalt placement and other construction activities.

Consideration should be given for the use of concrete around livestock watering troughs or tanks in lieu of gravel.

For urban and recreational areas, traffic control plants, landscaping timbers, wooden walkways, etc., should be evaluated for effectiveness and aesthetics.

PLANS AND SPECIFICATIONS

Plans and specifications for heavy use area protection shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. Plans and specifications shall include construction plans, drawings, job sheets or other similar documents. These documents shall specify the requirements for installing the practice such as the kind, amount, and quality of materials to be used.

OPERATION AND MAINTENANCE

The Operation and Maintenance (O&M) plan shall be prepared for and reviewed with the landowner or operator. The plan shall specify that the treatment areas and associated practices be inspected annually and after significant storm events to identify repair and maintenance needs.

The O&M plan shall detail the level of repairs needed to maintain the effectiveness and useful life of the practice.

For livestock operations, the O&M plan for heavy use areas may be included as a part of the overall waste management plan. Periodic removal and management of manure accumulations will be addressed in the O&M plan.

Conservation practices should be implemented that limit particulate matter emission into long-term maintenance plans.

REFERENCES

ASAE Standards
- EP288
- EP486

ASCE 7-02
ASTM D 698, D 1760
AASHTO M-288 (latest edition)
Florida NRCS Conservation Practice Standards
- Critical Area Planting, Code 342
- Fence, Code 382
- Filter Strip, Code 393
- Prescribed Grazing, Code 528A
- Use Exclusion, Code 472

"National Design Specification for Wood Construction" National Forest Products Association
National Engineering Handbook (NEH), Parts 642 and 643
- Material Specification 592, Geotextile